

AN EMPLOYEE TRAINING PROGRAM
AN EMPLOYEE TRAINING PROGRAM
FOR FRYE MANUFACTURING COMPANY
DES MOINES, IOWA

BY

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A FIELD REPORT

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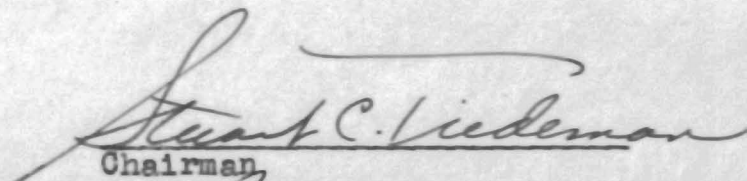
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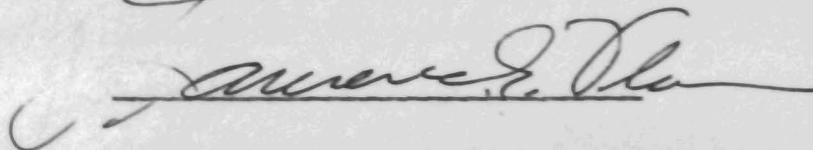
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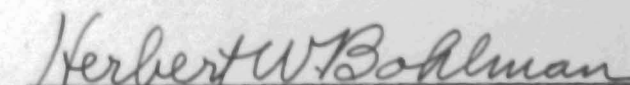
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Furthermore, one of the little ironies of our American system of school intrudes itself into the picture about this time. For the eight, twelve, or sixteen years of his school career he has been learning not only facts out of books, but habits out of experience; and one of these habits is the comfortable one of considering that if he does 75 per cent of his work correctly, he will meet with the approval of those responsible for his training and be 'promoted.' If he is correct in 85 percent, he is ranked as 'good,' and if he reaches 90 per cent he is classed as excellent and may win a prize of some sort for his outstanding performance. It is not his fault that he learns this superficial and slipshod standard of measures. It is part of his training.¹

¹Albert Walton, The New Techniques for Supervisors and Foremen, p. 111. New York and London: McGraw-Hill Book Company, Inc., 1940.

Yet it is with this material and these attitudes that industry must work. CHAPTER I
to be the machinists, office personnel, and all the other
GENERAL NEEDS FOR AN EMPLOYEE TRAINING PROGRAM IN INDUSTRY
workers in the field of industry. Of course, there are cases

the case and will learn to do so. Learning in its true sense does not end with the completion of the prescribed course of study of a school. It is, as is well known, a never ending process; learning goes on and on. It is with everyone from birth to death. Therefore, most of one's learning takes place after leaving the cloistered halls of an institution set up for his education. Most learning is a by-product of living; one frequently does not know its source.

The step from systematic, formal school life to the world of industry is a jolt to most youths.

Furthermore, one of the little ironies of our American system of school intrudes itself into the picture about this time. For the eight, twelve, or sixteen years of his school career he has been learning not only facts out of books, but habits out of experience, and one of those habits is the comfortable one of considering that if he does 75 per cent of his work correctly, he will meet with the approval of those responsible for his training and be 'promoted.' If he is correct in 85 percent, he is ranked as 'good,' and if he reaches 90 percent he is classed as excellent and may win a prize of some sort for his outstanding performance. It is not his fault that he learns this superficial and slipshod standard of measures. It is part of his training.¹

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it takes. Yet it is with this material and these attitudes that industry must work. It is these same people who are to be the machinists, office personnel, and all the other workers in the field of industry. Of course, this has been the case and will continue to be so. However, if the transition from an unproductive worker to a productive worker is to be made efficiently, it must be guided by persons who understand some of the basic principles of education and possess the capacity to apply these principles. One of the things a supervisor is likely to overlook is the fact that the worker himself must do the learning. The foreman feels that, if he explains and demonstrates the duties the worker must perform, the desired learning takes place and the man is capable of meeting a fair degree of success. Unfortunately, this is not all there is to the process. Learning cannot be poured into a man. All one can do is to remove as many as possible of the difficulties which stand in the way of his learning. "Teaching" is really guidance to aid in the process of learning.

In order to realize that repetition is not the most efficient method of teaching all things, one just needs to think and answer questions much like these:

1. How many steps are there leading into your house?
2. Is the top light green or red on the city stop lights?

From such a simple experiment as this it can be seen that

it takes more than just repeating an operation over and over to learn it.

If this Raw materials, manufacturing processes, markets-- all these things belong to the common domain; all these are within reach of any business, large or small; its source of productivity, of fresh ideas, or sound relations; the greatest source of energy and ability is still almost untapped by management. That is its wealth of human resources, which are still largely undeveloped, and whose possibilities we can only guess.¹

Bad training can make unhappy employees. Anyone would dislike a job he cannot do to the satisfaction either of himself or his superiors. The results of bad training are evident in many industries of today and are a chief concern to many of them. The problems of "griping," tardiness, absenteeism, and so on are traceable in many cases to insufficient training or bad techniques in the training process.

By proper training and orientation at the beginning of his career with an industrial firm, an employee can be assisted to bridge the huge gap that exists between the school of today and the world he is forced to face.

A few years ago a study of worker's attitudes revealed that 59 per cent had grievances against their company before they even went to work! They weren't treated as they felt they should have been

York: Harper and Brothers, 1949.

¹P. W. Boynton, Selecting the New Employee, p. 1. New York: Harper and Brothers, 1949.

in the employment office, and by the time they started work they were already 'mad' at the company about something.¹

CHAPTER II

If this attitude is prevalent, the job of training workers is made even more difficult.

Often the person who is responsible for the training of new employees has neither insight into the teaching process nor desire to train new workers. While no person would admit that he is unable to get along with people, it is a fact that some of the persons doing the important job of training new workers in industry have that very fault.

The most important function of management is teaching. A manager teaches in every phase of his work and gets real assistance from his people. A boss gives orders and carries the load by himself.²

The facilities of this plant are large and varied in scope. The product that is produced is carbon paper. In one department of the company ten machines are engaged in the basic operation of the plant, coating paper with a special ink, thus producing carbon paper for use in other industries and by printers. The rolls of carbon paper that are the finished products of the coating machines weigh approximately four hundred pounds and are fifty-four inches wide.

¹George D. Halsey, Training Employees, p. 106. New York: Harper and Brothers, 1949.

²Ibid., p. 1.

¹Ibid., p. 107.

shipment to them. To provide this service the Frye Manufacturing Company maintains the following departments:

CHAPTER II

1. **Slitting Department.** This department cuts the four hundred pound rolls of carbon paper that are produced by the company into rolls of the proper width and weight according to the customers' wishes.

PURPOSE OF THIS STUDY
More can be done to make or mar the new employee's future during his first few days than in weeks at any other time.¹

The writer proposes to study and to record information that may be used to train new employees at Frye Manufacturing Company, Des Moines, Iowa. In order to maintain the high degree of production needed in this, or any industry, it is necessary that the employees be well trained and happy in their jobs.

The facilities of this plant are large and varied in scope. The product that is produced is carbon paper. In one department of the company ten machines are engaged in the basic operation of the plant, coating paper with a pound rolls and adapt them to their purpose in their own special ink, thus producing carbon paper for use in other industries and by printers. The rolls of carbon paper that

are the finished products of the coating machines weigh approximately four hundred pounds and are fifty-four inches wide. Due to the rapid expansion of the company since the desire to make each worker happy with a secure, profitable job, the writer has been prompted to carry on this study

reported on the following pages. The writer wishes to incorporate what he believes to be sound educational principles have some of the further processing done in the plant before in the training of new personnel. The operations of each

¹Ibid., p. 107.

shipment to them. To provide this service the Frye Manufacturing Company maintains the following departments:

1. Slitting Department. This department cuts the four hundred pound rolls of carbon paper that are produced by the coating machines into rolls of the proper width and weight according to the customers' wishes.
 2. Processing Department. If perforations, slits for easier removal, or special preparations are desired, this department has the machines and the personnel to handle this to the customers' orders.
 3. Reaming Department. Sheets of any desired size are cut from the rolls, products of the coating machine. The sheets are also packed in reams or stacks of any desired number.
- These operations are, in brief, the extent of the production departments that comprise Frye Manufacturing Company.

Naturally, it may be more efficient in some cases for the purchasers to do some of the further processing in their own plants; many of them purchase the four hundred pound rolls and adapt them to their purpose in their own plants.

Due to the rapid expansion of the company plus the desire to make each worker happy with a secure, profitable job, the writer has been prompted to carry on the study reported on the following pages. The writer wishes to incorporate what he believes to be sound educative principles in the training of new personnel. The operations of each worker who runs one of the production machines are important

to every other employee as well as to the worker himself. The writer feels it is a good field in which to apply educational principles, for the results of the training program are evident in a very few weeks.

With the assistance of the many authorities listed in the Bibliography, the writer proposes to state specific methods which he believes will aid in the training of new workers.

Selecting the worker for a certain kind of work and bringing him into productive relationship with it are two entirely differing things. In order to bridge the gap, we must introduce the worker to his work. We must impart to him that information, that confidence, and that point of view which will transform him from an accepted applicant, who, nevertheless, is usually ill at ease, into a capable worker, confident, and interested.¹

It is not the author's intention to consider the selection of the employee in any way other than the fact that employees are selected by the personnel department to be trained. Selection of employees is the first step toward maintaining the supply of workers. Training these selected employees and adapting their particular skills to a job at Frye Manufacturing Company is the second step. It is with this second step that the writer intends to deal. It is further assumed that the person in charge of the employee selection knows what qualities are needed to produce the happy, contented, and interested worker. These

¹Ibid., p. 106.

qualities must be developed, channeled, and put to work for Frye Manufacturing Company.

It is evident that the selection and training of employees are two pillars upon which the success of a business stands. If either is slighted, the results will not be satisfactory. Although they are two distinctly different functions, they are dependent upon each other, for weakness in either can result in an unproductive and unhappy worker. It would be difficult to place them in order of importance. They are linked together just as the roots of a tree are linked to the leaves. Without each in the proper degree the entire tree will die. The person who does the hiring of the new employees will, therefore, need to be every bit as proficient in his job as the instructor is in his.

With both the employment officer and the training officer working together, better workers and happier workers will be the end result if both are competent people.

Men who have been trained in this manner learn

Present Method of Training New Employees at Frye Manufacturing Company

The new worker is hired by the personnel manager and is taken to the foreman who requested him. He is then introduced to the workers in his department by the foreman.

If he was hired to be a machine operator, his training is placed in the hands of the best of the present operators. The new man learns by observing the operations and accepting advice on how to perform the duties from two people, the operator and the foreman. After a period of time the new man is allowed to "try his hand" at the actual operation. If he seems to "catch on" quickly, he becomes an operator. In case he doesn't seem to grasp the operation, he is either placed on another job or discharged.

A second method that is used in obtaining machine operators follows the same pattern as far as training is concerned, but the man is transferred from some other job to that of machine operator. If he makes good, he is retained as an operator; if not, he is returned to his previous assignment.

Both of these methods provide little incentive for the new employee to learn. The man must develop the interest and the will to learn almost entirely from stimuli that are his own creation.

Men who have been trained in this manner learn little about the working parts of the machine. The author feels that for the operator to grasp the reasons for the various duties he performs, it is necessary for him to comprehend the mechanical principles of the machine.

The present program is more of a "survival of the fittest" than an attempt to develop efficient workers. The potentialities of the men are seldom reached. A few who have sufficient initiative to learn, succeed and progress; the others fail.

The workers who survive the rigors of the present training program become efficient workers. However, they seem to depend upon others for minor repairs and adjustments that they should be able to perform themselves with proper training. It is important that the reader understand that there are only a few machines being built commercially for sale to carbon paper producing companies. These purchased machines are not used by Frye Manufacturing Company because they have developed better ones for their purpose. These improved machines are constructed in the shops of the Frye Manufacturing Company.

While the author performed his duties at the company, after a regular day of teaching in the Des Moines schools, he noticed the opportunity to apply some of the educational principles and ideas he acquired through college study. In his own learning period with the company the writer noticed that he required further information about the company before he could become a truly contented

and motivated worker.

CHAPTER III

PROCEDURE FOLLOWED IN WRITING THIS REPORT

The author was employed as a draftsman by Frye Manufacturing Company in August, 1951. Due to the rapid expansion of the company it became necessary to build more machines to perform the operations that are carried on in the plant. It became the writer's duty to draw the plans for the fabrication of these new machines. It is important that the reader understand that there are only a few machines being built commercially for sale to carbon paper producing companies. These purchased machines are not used by Frye Manufacturing Company because they have developed better ones for their purpose. These improved machines are constructed in the shops of the Frye Manufacturing Company.

While the author performed his duties at the company, after a regular day of teaching in the Des Moines schools, he noticed the opportunity to apply some of the educational principles and ideas he acquired through college study. In his own learning period with the company the writer noticed that he required further information about the company before he could become a truly contented worker.

and motivated worker.

This personal experience started the writer thinking in an effort to develop further ideas pertaining to employee training. Discussions with the plant superintendent, vice president, and various foremen all substantiated the need for a study in the area of employee training.

involved. The writer does not mean to infer that he was the only one to realize that study was required in this area. Since the company is now in the process of expanding by perhaps 90 per cent, it is a good time for study of the training program so that any results obtained can be utilized at a time when the need is greatest.

Using his background and interest in education, the author sought to study the problems of employee training at Frye. He also read many books on the subject of employee training, looking all the while for factors that could be applied to the specific problem of developing an employee training program at Frye Manufacturing Company.

One of the things that was required was to learn the specific duties of the operator of a reaming machine which is used in this paper as an illustrative example of a training plan. The author accomplished this in the manner related in detail later. He made an analysis of the job, listing the various operations and mechanical principles that must be understood by a new reaming

machine operator.

Since the machine is bound to be unique for the readers of this report who are not familiar with the Frye Manufacturing Company, the writer photographed various stages in the operation of the reaming machine and included them in the report to help in explaining the processes involved. Almost anyone on a new job finds the first few days

difficult and trying, especially if he is taking up a new type of work. Any word of welcome and encouragement the supervisors and others may be able to give the new worker will count much in building that loyalty to the organization so necessary for maximum production. Conversely, any careless or unjust criticism, or any indication of dissatisfaction with the inexperienced worker may create a "scab" spot which will take months to heal.

In the entire forty year history of the Frye organization, not one man has sought employment who has had previous experience in the production of carbon paper. From this fact it is evident that each person who contacts the new employee during his training period must assist him and reassure him, for he is by no means, the only employee who required job instruction at Frye Manufacturing Company.

Some of the jobs held by people in the plant, of course, require previous training. In the machine shop most of the personnel have a background of experience in other

shops doing similar work. Also, the office employees and the personnel in the shipping room either have had or could have had jobs that demand the same basic skills. These jobs

CHAPTER IV

are not unique. INTRODUCING THE NEW EMPLOYEE TO the production jobs are FRYE MANUFACTURING COMPANY to the fact that

there are only six plants in the United States producing the

Almost anyone on a new job finds the first few days type of product made by Frye. These plants are located in difficult and trying, especially if he is taking up a new the following cities:

type of work. Any word of welcome and encouragement the supervisors and others may be able to give the new worker will count much in building that loyalty to the organization so necessary for maximum production. Conversely, any careless or unjust criticism, or any indication of dissatisfaction with the inexperienced worker may create a "sore" spot which will take months to heal.

It is evident that, since the production spread of the above listed plants is so great, there will be an infinitesimal number of potential production employees available to each of the other companies. In the entire forty year history of the Frye organization, not one man has sought employment who has had previous experience in the production of carbon paper. From this fact it is evident that each person who contacts the new employee during his training period must assist him and reassure him, for he is by no means, the only employee who required job instruction at Frye Manufacturing Company.

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shops doing similar work. Also, the office employees and the personnel in the shipping room either have had or could have had jobs that demand the same basic skills. These jobs are not unique to Frye, while, for the most part, the production jobs are. This uniqueness is due to the fact that there are only six plants in the United States producing the type of product made by Frye. These plants are located in the following cities:

1. Brooklyn, New York.
2. Cincinnati, Ohio.
3. Port Huron, Michigan.
4. Ennis, Texas.
5. Los Angeles, California.
6. Portland, Oregon.¹

It is evident that, since the geographical spread of the above listed plants is so great, there would be an infinitesimal number of pretrained production employees available to each of the other companies.

All of the facts listed above prove that a man who gets a job at Frye has a great deal to learn before he can be of real value to the company. It is probable that in some cases this lack of experience could cause good potential employees to quit, not due to any deficiency

¹Statement by F. C. Frye, Chairman of the Board, Frye Manufacturing Company, personal interview, March 14, 1952.

in the person other than the fact that he has been made to feel his task is an insurmountable one. This feeling is overcome by some. In others, the desire to achieve success to some degree from the start may force them to give up.

The new employee should not be expected to "shift for himself." He is a stranger among persons who know their way around and often in plants where the morale is low the other employees take delight in mixing the new man up and causing him great mental anguish. This can set a new employee back weeks in his training, for it suppresses the natural desire to learn and is humiliating. A new person does not feel free to ask questions of the more experienced people if he feels he will be made the brunt of a joke or be made to feel foolish.

A good introduction of the new employee to his work at Frye should include the following general topics, which will be elaborated later in this paper:

1. Establish the new employee's relationship to the company.
2. Help the new employee adjust himself to his new environment.
3. Inform the new employee of company policies and regulations, benefits, and any other specific facts.
4. Evaluate the new employee's performance to determine whether he is making a satisfactory adjustment during the training period.

5. Determine the specific training which the new employee requires in order to become a happy, contented, and productive employee.

Perhaps the most important single moment in the adjustment of the new employee takes place just after he leaves the employment office. It is at this point that he first tries to establish himself as a person worthy of the faith the company has in him. The man is proud to have a competent job instructor, the new employee will no longer be a stranger to his surroundings. To acquaint the new worker with the company the following steps will be necessary:

1. Guided tour of the plant.
2. Explanation of the functions and responsibilities of the new employee's department.
3. Establishment of the feeling that "the company" is not a heartless creature that devours the life's blood of the individual, but is as human as the people in it.

The last two steps are to be the motives for the tour of the plant. Time should be available for an unburied tour of the plant, following a definite procedure and with the objectives of the tour clearly understood by the person responsible for the tour.

Following in this report is a guided tour of the plant. In the tour the writer points out the things to be seen and the methods to be used in illustrating to the new employee the above three steps necessary to introduce him to Frye.

The personnel officer will call the instructor into his office at the completion of the final interview with the new employee. The new man is introduced to the job instructor in a friendly fashion. The new employee's specific job is explained to the instructor. Obviously, it is one of the basic things of which he must be aware in order to fit the new man's duties into the total picture of Frye. This job information, along with any other pertinent material concerning the individual, such as previous experience or training, is given to the instructor. These data should be used by the instructor to adjust his vocabulary level during the tour to the background and experience of the new worker. The new employee should be given a general idea of the company's machines used by the company. It is important to note at this point a fundamental principle that must be applied to all of the guidance which the employee will receive from this time on until he becomes self-reliant in his duties. The instructor must never talk down to the employee. The instruction should be geared to the new employee's capabilities and experience.

CHAPTER V

ESTABLISHING THE PROPER RELATIONSHIP

BETWEEN THE COMPANY AND THE EMPLOYEE

After spending some time in the company of a competent job instructor, the new employee will no longer be a stranger to his surroundings. To acquaint the new worker with the company the following steps will be needed:

1. Guided tour of the plant.
2. Explanation of the functions and responsibilities of the new employee's department.
3. Establishment of the feeling that "the company" is not a heartless creature that devours the life's blood of the individual, but is as human as the people in it.

The last two steps are to be the motives for the tour of the plant. Time should be available for an unhurried tour of the plant, following a definite procedure and with the objectives of the tour clearly understood by the person responsible for the tour. The instructor must never talk down to the employee. The instruction should be geared to the new employee's capabilities and experience.

Following in this report is a guided tour of the plant. In the tour the writer points out the things to be seen and the methods to be used in illustrating to the new employee the above three steps necessary to introduce him to Frye. The tour of the plant should include every department in the company. By the end of the tour the new employee should have an over-all view of the entire operation of the company. A logical place to start such a tour is in

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The tour of the plant should include every department in the company. By the end of the tour the new employee should have an over-all view of the entire operation of the company. A logical place to start such a tour is in

the administrative office since that is the place where the interview by the employment officer was conducted. In this office the various key personnel are pointed out at work and their duties mentioned. This will aid the new worker in connecting some of the operations he will see performed later with the paper work and planning that must precede the actual production.

From the office the next step in the tour is to the warehouse. In walking to the warehouse, the instructor explains more of the duties of the men whom the new employee just saw working in the administrative office. In the warehouse the new employee sees the raw material, paper, stacked in neat piles. The prices of a few of the types of paper used in the plant are given to acquaint the new worker with the value of the raw material. This will assist in developing a consciousness of cost which is vital to the economical operation of the plant.

From the warehouse the employee goes to the ink room. In this department he sees the mixing of the ink. The various substances that comprise the ink are shown and a brief history of their origin explained. For example:

This is Canaba wax. It is one of the things you see on that list of ingredients. This piece of wax has come a long way before we get it. It is extracted from a type of palm tree found only in Brazil. After we put it on paper with some of the other things you see here it will continue to travel around the world. Last year Frye sold several million yards of carbon

paper to the United States government. This carbon paper was probably sent all over the world. It may have been used to make reports and letters in most of the countries with which we deal.

The instructor should always try to impress the new employee with the extensiveness of the company. Few people who have come to Frye in the last ten years comprehend the size of the company. It is essential that the employee feels that he belongs to a company that is a leader in its field. Soon, perhaps, he will conclude the reason for this leadership is because he is one of the people who help to produce the best product of its type in the world.

From the ink room the next step in the tour is to the coating department. It is in this department that the new employee sees the products stored in the warehouse and the ink mixed in the ink room brought together in the actual production of long, wide rolls of carbon paper. The operation should be explained in simple terms to the employee. Care should be taken not to use words that are common only to the carbon paper making trade, such as rotary coater, slitting wheel, pressing against a roll with the paper, wind up unit, rewind unit, pattern bar, pressure roll, and any one of the hundreds of others that are in such common usage throughout the plant. Before using words that are unfamiliar to the new person, he should be acquainted with the equipment. The instructor should not try to impress the new worker with his knowledge. The new employee realizes Frye Carbon Paper. From here it goes to the shipping department and then to the purchaser.

that the instructor understands the operation; only antagonism can be created by carelessly using words and giving information that is far beyond the understanding of the new person.

~~the new~~ Some of the devices and methods used in controlling the quality of the carbon paper produced by the machines should be pointed out to the new employee. They will perform two functions in the orientation of the new man. He will see the care that is taken to produce a quality product by each of the people who handle the paper in the process of coating and also the technological inventions that assist in the maintenance of a quality product. It should be impressed upon the new employee that the workers at Frye are concerned with the production of only quality goods.

~~would be~~ In the room next to the coating department is the processing department. Here the new employee sees the further processing that is given to the carbon paper as ordered by the purchaser. The new employee should be shown the slitting of the large rolls of paper by the hardened slitting wheels pressing against a roll with the paper running rapidly between them. The stroboscope should be used to show the new employee the holes in the paper and also to verify, if need be, that the workers are striving for perfection in their work. The material processed by this department is ready to be used by many purchasers of Frye Carbon Paper. From here it goes to the shipping department and then to the purchaser.

Often it is necessary to produce sheets of carbon paper according to special order for the purchaser. The next department on the tour will take the new employee to the reaming department where sheets of carbon paper are made. Here the new employee sees the same four hundred pound rolls, that were the finished product in the coating department, go on special machines that facilitate cutting sheets of the desired size. These reaming machines are unique and very interesting since they involve the application of many basic principles of science, and yet are so simple that almost anyone can understand their operation if it is explained. If the new employee is to be trained to operate one of the production machines in the plant, it would be advantageous to explain the operation of the reamer in detail, since it involves many of the same types of units that are on all the other machines. The reaming machine is the simplest machine, mechanically speaking, in the plant. The conditions in this department are better than in the coating or processing departments for conversation. The machines in the other departments are noisy in their operation, while the reamer is less so. If the principle of the brake, clutch, wind up and unwind units are explained at length, the job of teaching the operation of any of the other machines will be made much simpler. The new worker will know what functions to expect from the

parts in the other production machines from his knowledge of the reamer.

The last step in the tour is the shipping department.

In this portion of the plant the operation is self-explanatory.

The new person will observe the preparation of the finished product for its journey to the purchaser.

5. The orientation of a new employee cannot be a following are some points that must be kept in mind to make a successful tour:

1. The instructor should not talk down to the new employee. If the new person is capable of understanding the operation in principle, the instructor need not bother at this point to correct any mistakes commonly made.

2. It should be made known to the new employee by the instructor's interest in him that he is free to ask questions. The instructor need not repeat, "Do you have a question?" The new worker will undoubtedly have many questions; he should be given the assurance he needs to feel that anything he says or asks will be treated as a question or statement from a mature person.

3. In the initial tour of the plant it is necessary to introduce the new man to many of the people with whom he comes in contact. It is not necessary to introduce him to everyone in the plant. However, he should meet a few of the workers in each department and all of the workers in the department in which he will be employed. These introductions need not be long or elaborate. The man's name and why he is there should be stated.

4. The company has a selling job to perform. It is usually thought that the employee must make good, not the company. The writer disagrees with this. If the new employee is to become a part of the company from the start it can be no one way situation. It is true that the employee must prove to the company that he has what the employment officer thought he had, but it is also the

job of the company to convince the worker that he is the type of person who is wanted by the company to carry on the important work of operating the machines. When the employee realizes that the company wants him to be happy, contented, and a productive worker, his job of proving his worthiness may have a new meaning to him. His proof will, perhaps, take on a concept of pleasing the company, not merely one or two individuals who are his immediate superiors.

5. The orientation of a new employee cannot be a one man job. Assistance and understanding must be shown by every man with whom he has contact. They must make the new man welcome and offer to be of help if needed.

A very important step in the preparation of the learner is the motivation or stimulation of the individual to proceed actively in developing his skill as rapidly as possible. The instructor cannot consider the employee motivated to learn merely by reason of his being hired. Proper motivation can cut the time of the learning process and make the training period more enjoyable, because the individual sees behind the immediate routine, and provides a reward in the learning which promotes further effort.

Some of the recognized motivators that are directly or indirectly related to the satisfaction of the basic needs of a worker may be listed as follows:

1. Adequate wages. Money is the means of exchange whereby the individual may trade his efforts in one single job for the fruits of effort in various lines of activity. With money he can buy food, clothing, shelter, and keep his family.
2. Recognition. Many think they desire recognition as an end in itself. On the other hand recognition leads to a more definite chance to satisfy the biological needs.

3. Security of position. This is the assurance that the basic needs will be satisfied in the future as well as in the present.

4. Opportunity for advancement. This is an enlargement of the first three. It gives promise of more money, more recognition, and more security.

5. Self-preservation and personal safety. This of course is the summing up into one pattern all the basic biological motivating forces.¹

The good instructor will always "sell" his subject. The importance of motivation, which should meet the five basic needs listed above, is illustrated by the following:

Many teachers believe that they can afford to spend as much as 50 per cent of the available teaching time in arousing interest in the subject, and only 50 per cent in actual 'instruction' and yet do a more successful job of teaching.²

It has been said that giving instructions is not like "filling a bucket" but more like "lighting a lamp." If the interest can be aroused in those who are to undergo the training, the rest of the instructor's task will be comparatively easy.

At the end of the tour the new employee and the instructor should sit down in a comfortable atmosphere, conducive to discussion. Any of the questions pertaining to the over-all view of the operations the new employee saw in the tour will be discussed, and attention given to

10. ¹Vernon G. Schaefer, Job Instruction, pp. 278-279. New York and London: McGraw-Hill Book Company, Inc., 1940.

11. ²George D. Halsey, Training Employees, p. 40. New York: Harper and Brothers, 1949.

all points that will better aid the new employee to see the complete picture of the company.

Special attention should be given to how the particular job the new man will perform after his training period fits into the over-all operation of the plant. From this discussion some of the responsibilities that will be his will be brought out. It is essential that at this early stage in the training of the new man he be informed of the company policies as they relate to him.

The following check list may serve as a guide for the instructor to better communicate the policies of the company. How each of these relate to the new man should be discussed point by point:

1. Rate of pay.
2. Hours of work, overtime, and incentive pay plan.
3. Regulations for checking in and out.
4. Holidays and vacations.
5. Department rules and regulations.
6. Safety rules, and reasons.
7. Employee welfare activities.
8. Sickness and accident benefits and procedure.
9. Insurance and retirement benefits.
10. Promotion within the organization.
11. Company history and organization.
12. Plans for training and education by the company.

The last of these would be given in general terms, more to acquaint the employee with what will follow in his training than anything else. For the job that will be used later in this paper the training schedule should follow this pattern:

1. Explanation of the purpose and need for the job.
2. Schedule of training.
 - a. Learning names and principles that are involved.
 - b. Learning the actual operations to be performed.
 - c. Practice in these operations until proficiency is achieved.
 - d. Evaluation of success in performing operations on the job.

The next step is to start the actual training of the man for productive work. The new employee should be ready to learn; he has a basic understanding of the company and what is expected of him.

3. Every person, regardless of physical or mental features, has a dignity that should be respected by all. All creatures are of the same God. Some have more of certain things, others have more of other things, but a common denominator of all persons is the basic right to be called a man in the eyes of God. Special consideration must be taken to respect the dignity of older men.
4. The man's errors should be minimized in the learning process and the things that he does well should be maximized. Reassurances will give rise to self-confidence, but by constant criticizing, the man may be thwarted in his motivation.
5. Instruction should begin with the easy and progress to the more difficult.

steps. This is a duty that the instructor must perform.

CHAPTER VI

SOME BASIC REQUIREMENTS OF A TRAINING PROGRAM

Some basic principles that must be followed to achieve effective learning on the part of the trainee are given below. These will be incorporated in a sample training pattern later in this paper.

1. The man must do the learning. No amount of force can instill learning in the mind. It must come from within the person receiving the instruction.
2. Every individual is different from every other individual. It is true that all have many similar basic characteristics, but there are as many different minds as there are people. This makes each one different from every one else.
3. Every person, regardless of physical or mental features, has a dignity that should be respected by all. All creatures are of the same God. Some have more of certain things, others have more of other things, but a common denominator of all persons is the basic right to be called a man in the eyes of God. Special consideration must be taken to respect the dignity of older men.
4. The man's errors should be minimized in the learning process and the things that he does well should be maximized. Reassurance can give rise to self-confidence, but by constant criticizing, the man may be thwarted in his motivation.
5. Instruction should begin with the less difficult and progress to the more difficult in logical

steps. This is a duty that the instructor must perform.

6. The worker should start at the level of his capacity. It would be foolish and a waste of time to explain a process or theory to a man who already has an understanding of it. The dignity of the man is not being respected when the instructor insults him by going over a point that is already evident to him.

7. Instruction cannot be brought to a close in a definite period of time according to a schedule. The training program must be adapted to each individual undergoing the training. This may seem contrary to practice, but the writer believes it is the only way that a training program can succeed over a period of year. If it is not adapted to each person as he undergoes training, it will fall into the pattern of a booklet of instructions and then die. Training must be kept alive by constant study, revision, and evaluation.

8. The instructor must have confidence in the people he is training. The instructor must have the attitude that the man being trained has every capacity to satisfactorily learn the job expected of him. If the instructor does not have this confidence in the man with whom he is dealing, the trainee will, in all probability, soon sense the lack of confidence, and his motivation to learn may be impaired.

The first of these characteristics can be fulfilled in any of a number of ways. Seldom a person is found who is a "born teacher." If a "born teacher" is skilled in an operation that is to be taught, he may be a competent worker and skills that are not readily found. The instructor must have a background of experience and understanding in both how to teach and what to teach. A man who is a competent, skilled worker in the job for which the new man is being

Characteristics of the Successful Teacher

In order to bring about the desired learning in the trainee, the instructor must have certain qualifications and skills that are not readily found. The instructor must have a background of experience and understanding in both how to teach and what to teach. A man who is a competent, skilled worker in the job for which the new man is being

trained, does not by virtue of his experience on the job automatically become the best training officer. Adequate training and guidance of a new worker demands much more.

If you find it practical to initiate a training course, your first concern is the selection of a teacher. You may by great good fortune find in store or plant a top-notch producer who can make a top-notch teacher. Such a person is a 'natural.' If you cannot find such a person--more likely if you find him, you cannot get him released to you to give stated training courses--then it is best to find someone who has the attributes of a good teacher and put him through the departments or operations to be taught. If your budget will stand adding such a teacher to your staff, by all means do so.¹

Perhaps the most important objective of a successful training program for industry would be to train better workers in a shorter period of time. In order to attain this objective the person who does the actual training will, of necessity, be a person with the following two characteristics: (1) knows how to teach, and (2) knows what to teach.

The first of these characteristics can be fulfilled in any of a number of ways. Seldom a person is found who is a "born teacher." If a "born teacher" is skilled in an operation that is to be taught, he may do an acceptable job of training. However, a fact that must not be overlooked is that the employee who is skilled in an operation he is

1. He should possess a personality that is positive

¹Harry King Tottle, Employees Are People, p. 100. New York and London: McGraw-Hill Book Co., 1947.

teaching may not wish to divulge all of the tricks, skills, and techniques that make him a skilled worker because of jealousy. The operator may feel that the man undergoing training may some day outdo him. "If he has all of my secrets, why shouldn't he?" may be his thought.

The teacher may obtain an understanding of the teaching process either from college study or from a natural talent or both. The prime attribute of the successful teacher is that of having an interest in teaching. If the desire to teach is strong enough and the ability to do the actual teaching is present, the person will probably do a creditable job of training new workers.

The criteria for judging the general personal characteristics of the teacher are, in the judgment of the author of one of the books listed in the Bibliography, given below. The author of the book quoted states that he feels these traits are the most important for the professional success of the teacher.

1. The teacher should possess a high degree of intelligence. The more intellectually competent the teacher is, other things equal, the greater his potentialities for success.
2. He should be strong enough physically and so well-balanced emotionally that he will not be exhausted by the duties of the classroom and extra-classroom activities.
3. He should possess a personality that is positive in its effects in influencing people to accept his leadership.

4. He should enjoy associating and working with people of the age group which he expects to teach.
5. He should be keenly sensitive to the activities of people in their struggle to satisfy their needs in all areas of human experience.
6. He should possess such breadth in his intellectual interests as will enable him to live a meaningful and purposeful life.
7. His moral character should be on such a high level that it would serve as a desirable pattern in influencing others.
8. He should have a comprehensive grasp of the function of education in society, and an understanding of the significance of the work of the teacher.
9. The teacher in his personal habits should be well poised at all times, correct in speech, neat and clean in dress and appearance, and his voice should not have a disturbing effect on the listener.¹

The knowledge of what to teach at Frye Manufacturing Company can only be gained by actual work experience. As stated in the first quotation in this chapter, the instructor should be taught the various machine operations and principles. He, then, should actually perform for at least one week the various jobs he will later teach. In this time he should gain some proficiency in the operation and gain insight into the training problems. The "what to teach" can

¹George Goud, The Teacher and His Work, p. 39.
New York: The Roland Press Company, 1947.

only come from experience in the actual duties. The machine operations at Frye Manufacturing Company are not written in any book. The duties of the workers are of such a nature that only time spent in the actual operations will familiarize the instructor with his duties.

The job to which the author will apply his principles is that of the reamer operator. It will be recalled that this department was visited in the tour and these men were observed while performing their duties under actual working conditions. To refresh the reader's memory, it is in this department that the rolls of carbon paper produced by the coating machines are cut into sheets of the required size.

The training of a reaming machine operator begins with the plant tour as described earlier. It would be wise to allow for a more extensive view of the entire reaming department at the time of the first visit. Little effort should be expended by the instructor in the actual training for specific duties during this initial visit. There will be plenty of time for specific duties to be taught later. However, if the trainee should ask questions involving the actual operation of the machine, the instructor should explain them to the satisfaction of the new employee. After the tour of the plant has been completed, the instructor will conduct the new employee back to the

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CHAPTER VII

A SAMPLE TRAINING PATTERN

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department in which he is to work, in this case, the reaming department. While to the reader there may seem little reason for returning to the department in which the employee will work, the author believes this step will enable the new man to fit better his department into the over-all picture. One of the attitudes that the instructor is trying to create in the mind of the man is that his job is one of the very important ones in the company.

While in the reaming department the importance for the return visit to this department will be explained to the new employee by discussing the uses of the produce he will be making. The uses of his product are so varied in nature that a detailed explanation may confuse him. The new worker will need to become acquainted with the technical terminology common to his job and the carbon making industry before he is able to achieve a greater insight into his job.

Factors That Will Assist the New Employee to Obtain A Good Start in His Training

1. Consideration of when to start the instruction.--
If at all possible the tour should be given either on Wednesday or Thursday. If this seems odd, it is due to the fact that the writer wishes to have the new employee learn some of the general material before the man gets into his specific training. If the tour is given on the two mentioned days, it will enable the instructor to provide the new worker with an over-all view of the company and provide time for motivating the new employee for his training. Time must be considered because

This may be the machines in the reaming department where the man will be working are in operation during the week days. The noise is distracting and makes talking difficult. The man will first be taught the basic principles of the machine and then the operating of it. Time can be allowed for practice and instruction if the man learns these specific operations on a Saturday when just he and the instructor are in the department. There will be no chance for the other workers to observe the employee's mistakes or to overhear the so-called foolish questions that may be asked.

2. Familiarity with the physical layout of the plant.--Unless the new employee feels at ease in the building, he will not be able to put forth his best concentrated effort. He should know where the drinking fountains and rest rooms are located and the general rules should be made known to him. The new man will be able to overcome the feeling that he may be doing something that is not in accordance with the rules only by knowing what the rules are.

3. Realization on the part of the new employee that the people at Frye are glad that he is going to be one of the company's employees.--During the tour of the plant the friendly and cooperative attitude of the people he meets should aid the new employee in gaining this realization.

If any one of the above-mentioned points are overlooked, the results may, to some degree, hinder the progress

of the new man. In the conference that follows the tour, the instructor should be at the special effort may be made by the instructor to discover if the new man has these basic factors well enough in mind to have a pleasant beginning in his new employment. aid in developing a feeling of "belonging."

Near the conclusion of the interview which follows the tour, the time and place for the next meeting with the instructor should be made clear to the trainee. The new man should be taken to the exact spot of the next meeting.

This may not seem necessary, but the new employee is a comparative stranger to the plant. He knows in a general way where many things are, but, if the instructor were to say, "Meet with me on Friday in the south room in the shipping department," it is possible that the trainee might be confused in his directions and not realize it until the time of the next meeting.

What the new employee will probably consider his actual training will begin with the meeting between the instructor and himself. However, the guidance that has preceded the new employee's specific training is perhaps more important in the adjustment of the worker than the worker realizes. From the explanation of the training schedule that was covered in the conference following the tour, the man knows what to expect in a general way from this first day's training. He should be somewhat at ease from the start of his specific training.

On the day that the actual training is to start, the instructor should be at the appointed place of the meeting before the trainee arrives. The meeting should have a pleasant beginning in order to put the new employee at ease. The new employee should be asked about his trip out to the plant. Any questions about transportation, signing in, or any other matter that may have arisen during the time that has elapsed since he last visited the plant

should be considered very carefully. The beginning of the training should be unhurried and carefully planned.

The Training Program

7. After the "break" the various operations that the trainee will be expected to perform.
- Plan for the First Day's Training--Friday
1. An interest should be shown in what the man has to say and all questions should be considered carefully. The instructor should ask how the new employee progressed in getting to work and signing into the plant. The new employee's time card should, of course, be in its proper place before he arrives.
2. The instructor will start the actual training with an over-all view of the reaming machine. The names of the large parts should be stressed and their functions explained if they are not self-explanatory. The explanation should be given with the aid of pictures, drawings, and other visual aids.
3. The instructor should demonstrate and discuss the principles involved in the operation of the various parts of the machine. As many of these principles as possible should be illustrated by simple examples, pictures, or drawings.
4. The instructor should take the new employee to the reaming machine and point out the parts that have been discussed. A still better method would be to have the new man point out the parts. The instructor will then give any information needed to further explain the principles involved.
5. The trainee will watch the actual operations performed by the operator of the machine. The new man's attention will be called to the rhythm of the duties performed and the smoothness in performing the various operations that are the marks of a good operator.
6. At this point the training should stop for awhile. A break of perhaps fifteen or twenty minutes should be allowed. The employee should be shown where he

8. may get a cup of coffee or a soft drink if he wishes and he should be directed to the rest room. This time should not be used to stress any loose ends that have been overlooked or covered weakly by the instructor.

7. After the "break" the various operations that the trainee will later be performing are discussed one by one in the order they will be performed.

8. Conclusion of the first day's lesson.

11. Second Day's Lesson Plans--Saturday

1. The various parts of the reaming machine will be reviewed.
2. A review of the operations that are to be taught to the new employee will be conducted.
3. The instructor will demonstrate the operations, remembering to point out that smoothness is most important at this stage of training.
4. The trainee will be guided through the steps in the actual operation.
5. Time should be allowed for practice, not more than one-half hour.
6. A rest period should follow the practice.
7. Any difficulties that the new employee encounters in his practice will be discussed. Time for more practice will be allowed. Methods that may make the new employee's duties easier for him should be brought to his attention. The correct things that the trainee does are stressed, and the instructor should guide him away from repeating the errors. All of the mistakes that the new employee makes in the pattern of operations should not be pointed out. One pattern of the operation should be used to get one point across, and also to change one thing that could be a bad habit if allowed to continue.

not.

8. Self-reliance should come at about this stage in the new employee's training, since he knows many of the correct operations and principles of what he is doing.
9. Time for practice without the instructor should be given. This would be the new employee's "solo flight." After a few minutes the instructor should return. Any difficulties that have arisen will be uncovered and attention given to them.
10. More time for "solo" work is given at this time. Supervision is lessened. Same pattern as number nine.
11. Discussion of the day's activities.
12. Plans for the next day's training will be explained to the trainee. The new employee will be informed that he will be working in the department with the other workers and under actual working conditions. Any changes that will take place that vary from the things that occurred in his second day's training will be discussed carefully.

Third Day's Training--Monday ¹

1. The new man is first taken to a room for a discussion of the day's activities. He will be given a review of the things that have taken place in the previous days of training. Again he will discuss the parts of the machine and their functions. Any last minute points that need clarification will be discussed.
2. The new man is then taken up to the reaming machine that he will be operating. He will again be acquainted with the functions of the various adjustments that are to be made during production.
3. The instructor will go over the pattern of operations that the man will perform. The purpose of this example will be to refresh the

9. ¹Monday is an actual working day while Saturday is not.

1. memory of the trainee. The new employee will be asked to go over these same operations and explain them to the instructor just as if the new man were doing the training instead of receiving instruction. This, if done to the satisfaction of the instructor, will serve as the new man's final check before he is turned to actual production work.
2. assist in getting the man used to the work.
4. After the check mentioned above is completed and approved, the man will be left to do production work for about one hour. At the end of that time the instructor will return and evaluate the quality and the quantity of the work produced by the new man.
5. The trainee should be praised for the work he has done rather than criticized. Any questions that have arisen should be answered. The instructor should watch the motions of the man with economy of effort in mind. If the instructor has failed to convey a method that has been found by past experience to be the best, much tact should be used to inform the trainee of the better method. Something like this could be used: "Some of the men doing this job often prefer to do this. . . . You may wish to try it and see what you think of it."
6. At the conclusion of the discussion above, the amount of material the man has produced should be noted. In a few hours the instructor should make another note of the production of the new man. This procedure should be maintained at periods during the day in an effort to notice any improvement or to solve the difficulties the new man may be having.
7. Near the end of the day's work the instructor should return to the new employee and discuss any of the problems the new man may have.
8. Places that require retraining should always be sought. The instructor may find them at any point in the man's training. They should be taught again by a different method.
9. At the end of the day the instructor will discuss with the man the plan that will be followed for the next day's training.

Fourth Day's Training--Tuesday

1. The new man was informed at the close of the third day that he was to report for work the fourth day and go directly to his reaming machine.
2. The instructor should be near the machine and assist in getting the man started on this day. The trainee will again be informed that the smoothness of the operation, not the amount of material he produces, is the important thing.
3. If the employee is attaining a smoothness in the operations, he should be encouraged to speed up his motions gradually. The employee will be the one who notices the places where he can increase the speed. He will obtain a degree of skill in some parts of the entire job before others and thus realize at which of the parts he will need more practice.
4. By the end of the fourth day the employee should begin to be quite self-reliant. He knows the principles involved in the operation of the machine and he has been guided along the paths toward learning the operations that he will be performing. However, the instructor should not be lead to believe the instructions are finished. He should look in on the worker often, at least four times during the working day. The instructor should inquire if the man has anything that is giving him difficulty. The author believes most men will welcome this interest shown by the instructor and will not consider it a spying program if it is carried out in a manner of assisting and not criticizing. If the instructor uses harsh language or speaks in a dictatorial manner, the trainee is not being assisted in becoming self-reliant. He is, rather, being trained to be on guard when any of his superiors are near.
5. Near the end of the fourth day the instructor should visit the man and notice the progress he has made. If sufficient skill has been attained to consider the man able to continue alone, the new man should be informed that he has done a fine job of learning the duties and that he is now capable of starting the next day alone.

could almost be Fifth and Following Days

1. The instructor will make a friendly visit to the new man near the beginning of the day. If the trainee is developing into a good worker, he should be informed of the fact. If he is not, he need not be told how inferior he is or compared to other men who have been trained. The new employee should be given a fair trial, for it is a basic fact in education that insight into a problem varies with individuals. This means that some men will develop into self-reliant workers more quickly than others. However, the man who develops the insight into the job more slowly may be a more efficient worker in the long run.

It will be recalled that one of the items that was considered in taking the new employee on the tour was that satisfactorily to the training that has been given, the of language. The new employee was not expected to understand the technical words in common use in the department. The instructor should analyze the reasons for the failure.

Another period of training may be required to bring the worker into a more productive relationship with his work. It was pointed out that few employees use the department and, therefore, the same language. In some cases it may prove that the man does not possess the first tasks of the new employee would be that of the qualifications for the job. In this case the potentialities of the man should be re-evaluated and, if the learning new terms and the names of the parts of the machine.

department foreman desires, another type of work may be found for him. To bring about the desired degree of familiarity with the machine, the new man will need to be shown the

In the evaluation of the new worker it may be advisable to compare his production at different times with the machine, the new man will need to be shown the terms and drawings of a reaming machine. The instructor will point out the various parts and also describe their functions during the training period with the curve of production functions. If at all possible, the various curves that that has been developed over a period of years. This comprise the machine should be available to the instructor curve forms the basis of the incentive wage plan that for teaching purposes. In the training of a machine operator the parts could be discussed during the tour. The progress and worth of the training program

could almost be evaluated from the earnings of the men who have gone through the training program. However, more complete information should be gathered concerning the efficiency of each man, his adjustment to the job, and the actual quantity and quality of his production as is described later in this study.

What the Man Will Need to Learn to Become
An Efficient Worker

It will be recalled that one of the items that was considered in taking the new employee on the tour was that of language. The new employee was not expected to understand the technical words in common usage in the plant. It was pointed out that few companies use the same equipment and, therefore, the same language. Logically, one of the first tasks of the new employee would be that of learning new terms and the names of the parts of the reaming machine.

To bring about the desired degree of familiarity with the machine, the new man will need to be shown pictures and drawings of a reaming machine. The instructor will point out the various parts and also describe their functions. If at all possible, the various elements that comprise the machine should be available to the instructor for teaching purposes. In the training of a reaming machine operator the parts could be discussed in the following

order: (1) unwind unit; (2) wind up unit; (3) brake unit;
(4) clutch unit; (5) linkage unit; (6) jogging table; and
(7) lay up table.

Detail of Plate I

Figure 1: View of reaming machine from operator's position

Note:

1. Foot lever which operates machine located in lower center of picture.
2. Counter which indicates when the drum has turned required number of revolutions, located in top center of picture.
3. Threading from the unwind unit (roll of paper just showing on the right hand edge) to the slitting drum (cylinder that contains the groove in the left-center of the picture).

Figure 2: View of the unwind unit.

Note:

1. Operator is removing the empty roll of paper and preparing to install the new roll shown at left of the picture.

PLATE I

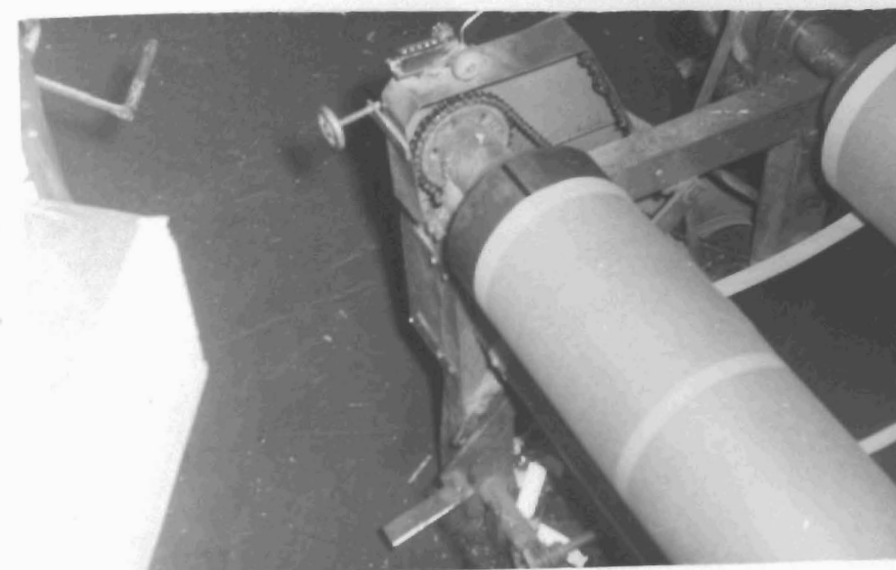


Figure 1



Figure 2

Detail of Plate II

Figure 1: Operator is making the cut.

Note:

1. The groove in the slitting drum as a guide
2. Body and arm position of the operator; firm grip on the knife; body braced.
3. The roll nearest the camera is part of the unwind unit. The locks that hold the roll in correct position are evident.

Figure 2: This is a detail of the beginning of the cut.

Note:

1. The operator has inserted the knife in the groove and sloped it sideways in order to fully utilize the groove in the slitting drum.
2. The counter can be seen clearly. It is mounted on the top of the machine and appears just above the operator's forearm.

PLATE II



Figure 1



Figure 2

Detail of Plate III

Figure 1: The operator has completed the cut and is transporting the sheets of carbon paper to the jogging table.

Note:

1. The knife is returned to the holder on the far of the machine.
2. Position of the hands.

Figure 2: The sheets are being lowered onto the jogging table.

Note:

1. Several sheets of cardboard can be seen on the jogging table. These sheets of cardboard will be later in the process.
2. The position of the left hand has been moved near the opposite corner from the right hand. The right hand still grasps the sheets firmly in the same position as Figure 1 above.

PLATE III



Figure 1



Figure 2

Detail of Plate IV

Figure 1: The operator has deposited the sheets of carbon paper on the jogging table.

Note:

1. The left edge is turned back about six inches.

Figure 2: The operator has left the sheets on the jogging table and has returned to the machine.

Further treatment will be given to the paper on the jogging table. The foot lever is being pressed, and the loose end from the large roll of carbon paper is being wrapped around the slitting drum. The slitting drum must be given a few turns by hand to overcome the inertia of the heavier roll on the rear of the reaming machine.

Note:

1. Position of the hands.
2. Flow of paper from the large roll to the drum.

PLATE IV



Figure 1

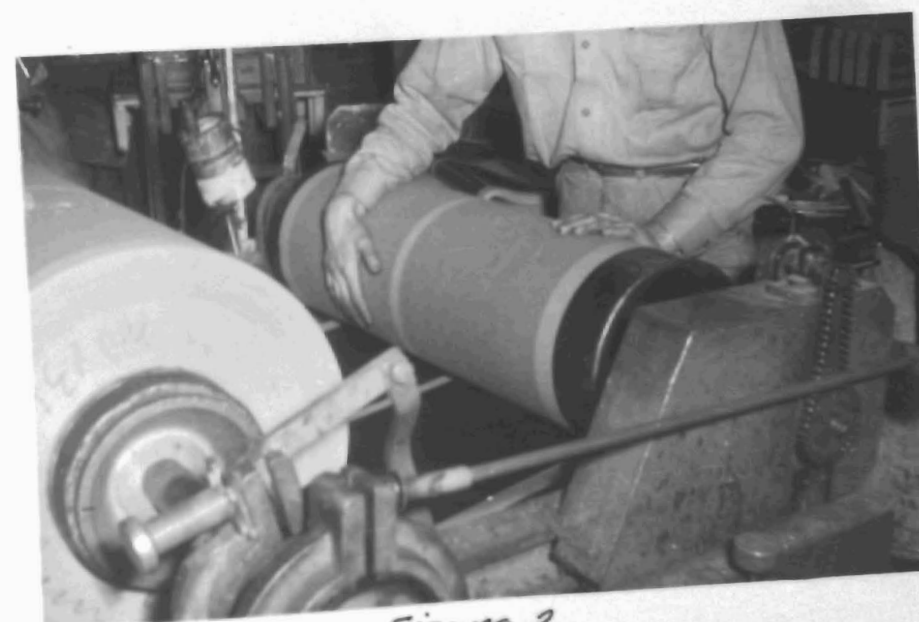


Figure 2

Detail of Plate V

Figure 1: The operator has started the machine in operation. It is winding more paper onto the slitting drum.

Note:

1. The operator has returned to the sheets that were deposited on the jogging table.
2. The right hand edge is now turned back about six inches also.
3. The operator is carefully jogging the sheets against the back of the table.

Figure 2: Care is being given to fan the edges on the right hand edge of the sheets. The spread of this fanning should be about one and one-fourth inches. The machine is still winding more paper on the slitting drum during this process.

PLATE V



Figure 1



Figure 2

Detail of Plate VI

Figure 1: The operator has transported the sheets of carbon paper from the jogging table to the lay up table.

Note:

1. The right edge has been turned down at the moment he dropped the paper onto the lay up table.
2. The machine is still in operation.

Figure 2: The operator is carefully aligning the right hand edges square to the sides of the lay up table.

Note:

1. After the right hand edge of the sheets is turned down, the edges are nearly aligned vertically.

PLATE VI



Figure 1



Figure 2

Detail of Plate VII

Figure 1: The operator has aligned the sheets of ca on
paper so that the right hand edges are ne ly
perpendicular to the floor.

He is not concerned with the left hand ed
Any differences, due to the length of she
are on the left hand edge. A piece of th
cardboard is taken from the jogging table
placed on top of the sheets on the lay up
table. This separates each group of shee

Note:

1. The operator is observing the counter.

Figure 2: In this picture the operator is watching t
counter.

When it reaches the correct number he will
release the foot lever and cut the paper
off of the slitting drum as described befor
The pattern of operations is back to the
beginning. It is repeated.

PLATE VII



Figure 1



Figure 2

Plate I Listed below are parts of the reaming machine and a few points that will be covered in acquainting the new man with the principles and language he will need to learn.

Unwind unit.--The four hundred pound rolls of carbon paper produced in the coating department are placed on the unwind unit. This unit consists of a shaft with two locks that hold the roll of paper in place. In Figure 2, Plate I, the operator is removing the unwind shaft from a roll of paper that has been cut into sheets and is preparing to insert the shaft into a new roll of paper. This new roll is shown in the left hand side of the picture.

The function of the unwind unit is to hold the large rolls of paper in position for unwinding onto the slitting drum. This large roll of paper is the supply of material.

Wind up unit.--The wind up unit consists of a shaft running across the width of the machine with a drum attached to it. It is this drum that determines the size of the finished sheet of paper. The loose end of the large roll that was installed on the unwind unit is brought over to the wind up unit. The wind up unit is then revolved a certain number of times. The number of turns depends on the number of sheets that are desired in the finished product. It is important that the slit which runs the entire length of the drum contained on the wind up unit be brought to the attention of the employee. (See Figure 1,

Plate II). This slit acts as a guide for the actual cutting operation. In Figure 2, Plate II, the operator is making the cut of the paper, using the slit in the drum as a guide.

Brake unit.--This unit should be taught by observing the actual parts of the machine. The brake unit will be removed and replaced by the trainee and the instructor. The brake is located at the left hand side of the unwind shaft. It consists of two brake shoes that are lined with material identical to that used in automobile brakes. When the foot lever that is located on the front of the machine (see Figure 1, Plate I) is released from a catch that is designed to hold it in a depressed position, the brake unit is forced into action. Its function is to control the speed of the unwind unit.

The brake unit is illustrated in part in Figure 2, Plate IV. The instructor should take care in explaining this unit. It is very important in the operation of the machine. If the employee is not familiar with it, he will have difficulty in adjusting the brake for different types of paper. The principle of this brake is not too difficult for anyone to grasp. A brake drum is connected onto the unwind shaft. As the shaft turns, so does the drum. The brake shoes, containing the linings, are pressed hard against the drum when it is required that the four hundred

pound roll of paper on the unwind unit be stopped. When instructing this part of the machine, particular care would need to be taken so that the instruction is not given too rapidly. Each part should be shown and the principle explained.

Clutch unit.--The clutch unit is located directly below the brake unit near the base of the machine. This unit consists of several plates that rotate at a high speed. When the foot lever on the front of the machine is depressed, the clutch is pressed together, giving power to the wind up unit, which in turn winds the paper from the large roll to the drum that is on the wind up unit. In giving the instructions to the new employee, the clutch should be dismantled. The writer feels that the clutch is one of the most difficult parts of the machine to comprehend. It is not necessary to spend hours in the explanation of the clutch or its principles. However, the new employee should at least understand how the plate is brought into contact with the disc.

By looking at the drawing (Plate VIII), which was made by the author for the fabrication of some of the machines that will be used in one of the new factories, the principle can, perhaps, be brought to light. The drawing shows all of the parts that are needed to construct a clutch. One of the parts, the shaft, has four ball

bearings imbedded in the face of the square part. When the part that has four matching holes is rotated, the clutch is engaged. The author realizes it does little good to state the principle in words. Therefore, the instructor should demonstrate to the trainee how the parts are fitted and just what takes place when the clutch is engaged. By discussion and demonstration, using the actual machine, the principle can be explained.

Linkage unit.--The linkage unit is what makes the other operating parts perform their functions at the proper time. This is brought about by using pieces of metal to connect the brake and the clutch on the foot lever that is on the front of the machine. When the foot lever is pressed downward, the clutch is forced into action and at the same time the brake is taken out of action. The action related above can be seen very readily on the machine. The pillow block that is located on the side frame should be pointed out to the employee, since it is the key to the entire system. How the various parts are connected and the action that takes place when the machine is operated, should be demonstrated several times with different parts of the entire operation being illustrated each time. The purpose of the demonstration is to clarify the principle involved and to demonstrate what action takes place when the operations are performed.

Jogging table.--The jogging table is located to the right of the operator. A good view of the jogging table is given on Plate V. The paper is moved to the jogging table after the actual cutting operation and is aligned very neatly.

Lay up table.--After the jogging operation the paper is moved to the lay up table. On the lay up table it is stacked in a neat pile, and awaits further cutting by the operator of another machine. The new employee is finished with the paper when it reaches the lay up table.

The seven major parts that have been discussed constitute the bulk of the operations that the new employee will need to understand. As can be seen by reading the description, more than mere words are required to convey the principles and ideas. The employee will need to actually see and feel the parts. Therefore, the machine that the man will be running should be used to point out the parts and operations that were mentioned. The new employee will need to be familiar with the principles that are used in the construction of the reaming machine.

After completing the discussion and demonstrations that have been mentioned, the employee should be checked on his understanding of them.

In brief, the operations are designed to transform the four hundred pound roll of carbon paper on the unwind unit to sheets of carbon paper. These finished sheets of

carbon Operations to Be Taught to the Employee Being
Trained for Reamer Operator

The author made a job analysis of the reaming machine operator. By observing the man on duty, the job analysis that appears in the Appendix was recorded. The author interviewed the foreman of the reaming department and had him, together with observed worker and acting superintendent, approve the material obtained by the writer's observation.

While this is perhaps not the best method, it did provide the writer with a knowledge of the techniques involved in operating a reaming machine. Undoubtedly the best way for the instructor to arrive at a comprehensive list of duties and problems of a new employee would be to gather notes and observations from actual work experience. Using both the notes and observations the instructor may be better able to understand the problems that may arise in training the new employee.

The job analysis includes the steps in the operation of a reaming machine in a logical order. The duties that the reamer operator performs follow a definite pattern. Approximately four minutes are required to complete the cycle of operations.

In brief, the operations are designed to transform the four hundred pound roll of carbon paper on the unwind unit to sheets of carbon paper. These finished sheets of

carbon paper are placed on the lay up table. To bring about this transformation from a continuous roll of carbon paper to sheets of the desired size, all the parts that are enumerated and explained in the previous chapter are involved. The terms that the new employee learned previously will be used in the training of the actual operations that the new employee will be performing. Since he will be observing part of the time and working part of the time, he will be given a review of the names that were discussed.

The specific operations that the reamer operator used to perform his job, listed in the order of performance, are as follows:

1. Taking the empty drum off the unwind shaft.
2. Putting new roll of carbon paper on shaft.
3. Hoisting the new roll onto machine.
4. Locking the shaft and roll into place.
5. Threading from the four hundred pound roll onto the slitting drum.
6. Starting the reamer.
7. Observing the counter and stopping the machine after the required number of revolutions.
8. Making the cut.
9. Taking the cut sheets off the slitting drum.
10. Transporting the cut sheets to the jogging table.
11. Laying sheets on the jogging table.
12. Starting reaming machine again.

13. Jogging sheets of carbon paper.
 14. Transporting jogged sheets to lay up table.
 15. Final stacking is made and cardboard placed on top of sheets.
 16. Observing counter; preparing to stop the reaming machine.
 17. Stopping machine.
 18. Making cut and thus repeating the entire pattern.
- These operations appear on the job analysis in the Appendix together with the keypoints that make the performing of these duties easier for the particular operator observed by the author. It is interesting to note that when the list of keypoints that were obtained from observing one man were compared with those of another man, there were some differences. The basic operation remained the same, but the techniques employed by two equally successful operators, from the evaluation of the foreman, were different in some respects. This bears out the importance of the instructor not giving "only ways" for doing the operation. Rather he should present to the new employee methods that have been proved by other employees to aid them in performing their duties. However, the new man should be encouraged to try new ways of doing the operation. He may develop a really good suggestion that may benefit the entire company.

The operations as listed on the job analysis together with the keypoints that were proved by actual practice should serve as a guide to the instructor in training the new man. It is obvious that they could not be presented to the new man in written form and be assimilated to the degree of doing the job without further training. The instructor should demonstrate the operations that are listed on the job analysis. The keypoints should each be illustrated to the new employee. They will probably not all be obvious to the employee. All the keypoints should not be mentioned the first time through the pattern; rather, the instructor should make one understood before proceeding to the next.

The accomplishments of the trainee are as follows:

1. Subjective rating. Have the trainee compare his performance with other employees. This may be made by the instructor or the department foreman, using their past experiences with other workers as a standard for judging the new employee. By experience with workers performing the same type of work, the new employee's superiors will be able to rate him in both quality and quantity of production. Snap judgments, hunches, and personal likes and dislikes should be avoided.
2. Examination. Examine the trainee orally and in writing, if desired, at various stages in the program. Recheck him in the items that he has not answered correctly and then retest. The new employee must have an understanding of both the physical duties he must perform and also an understanding of his machine.

3. Objective records. In the type of program that has been related in this report, much of the material cannot be tested. It is of such a nature that it will be noticed by the employee. However, after the worker has been on the job for a short time, he

CHAPTER VIII

MEASURING THE VALUE OF A TRAINING PROGRAM--SUMMARY

Teaching techniques and methods cannot be improved

unless the results are evaluated. It is necessary to

estimate the effects of each technique and method on indi-

viduals who differ in the ability, experience, and capacity

for learning. A careful appraisal of all the trainee's

accomplishments will be a guide by which the methods and

techniques used by the instructor can be evaluated.

Some methods that may be considered in determining the accomplishments of the trainee are as follows:

1. Subjective rating. How the trainee compares in performance with other employees. This may be made by the instructor or the department foreman, using their past experiences with other workers as a standard for judging the new employee. By experience with workers performing the same type of work, the new employee's superiors will be able to rate him in both quality and quantity of production. Snap judgments, hunches, and personal likes and dislikes should be avoided.

2. Examination. Examine the trainee orally and in writing, if desired, at various stages in the program. Reteach him in the items that he has not answered correctly and then retest. The new employee must have an understanding of both the physical duties he must perform and also an understanding of his machine.

other 3. Objective records. In the type of program that has been related in this report, much of the material cannot be tested. It is of such a nature that it will be noticed in the future actions, attitudes, and accomplishments of the employee. However, after the worker has been on the job for a short time, he may be objectively checked on such things as the following items:

- a. Punctuality.
- b. Speed of performance.
- c. Quality of work and product.
- d. Care of machine, tools, and equipment.
- e. Good housekeeping.
- f. Safety.
- g. Time lost.
- h. Waste.

It is never too late to reteach the individual.

The training program cannot accept either all of the credit or all of the blame for the future success or failure of an individual employee. However, if after a period of years it is noticed that entire groups of employees who have undergone training are better in some areas than the workers who have not, then it may be concluded that their training aided in this improvement.

Regardless of whether training is done by individual or group instruction, it should be broken up into units of instruction to care for individual differences. The instructor will always explain the mechanical principles, demonstrate the job, and stand by to assist the new employee in his learning. The new worker's dependence upon the instructor or

others for aid will gradually be reduced. As the new worker becomes acquainted with every phase of his job, he will become a competent and self-reliant worker.

JOB ANALYSIS SHEET FOR TRAINING PURPOSES

Department Reaming Machine Reaming Machine

IMPORTANT STEPS IN THE OPERATION	KEY POINTS
<p>Step: A logical segment of the operation when something happens to ADVANCE the work.</p>	<p>Key points: Anything in a step that might: Stop or break the job. Endanger the worker. Make the work easier to do.</p>
<p>1. Removing the empty drum from the unwind shaft.</p>	<p>1. The shaft drum end is removed first and lowered to the floor. The other end is lowered to the floor. Care should be taken so it not to drop the shaft. It will be broken or injure the worker.</p>
<p>2. Putting the new roll of carbon paper on the shaft.</p>	<p>2. The large roll is placed on the side first. The shaft is passed through it. The bottom end of the shaft must be placed in the roll for unwinding.</p>
<p>3. Hoisting the new roll of carbon paper onto the machine.</p>	<p>3. The electric hoist is brought into correct position on the track. The hoist is placed around the shaft. The roll is slowly lifted. The worker moves to one side to prevent injuries if the four hundred pound roll of paper falls.</p>
<p>4. Locking the new roll into the machine.</p>	<p>4. The new roll is slowly lowered. The right end is inserted to the lock first. The left end is lowered in the assembly that holds it.</p>

APPENDIX

JOB ANALYSIS SHEET FOR TRAINING PURPOSES

Department Reaming Machine Reaming Machine

IMPORTANT STEPS IN THE OPERATION	KEY POINTS
<p>Step: A logical segment of the operation when something happens to ADVANCE the work.</p>	<p>Key point: Anything in a step that might Make or break the job. Injure the worker. Make the work easier to do.</p>
<p>1. Removing the empty drum from the unwind shaft.</p>	<p>1. The right hand end is removed first and lowered to the floor. The other end is lowered to the floor. Care should be taken so as not to drop the shaft; it will be broken or injure the worker.</p>
<p>2. Putting the new roll of carbon paper on the shaft. the required number of revolutions.</p>	<p>2. The large roll is tipped on its side first. The shaft is rammed through it. The correct end of the shaft must be placed in the roll for unwinding.</p>
<p>3. Hoisting the new roll of carbon paper onto the machine.</p>	<p>3. The electric hoist is brought into correct position on the track. The hooks are placed around the shaft. The roll is slowly lifted. The worker moves to one side to prevent injuries if the four hundred pound roll of paper falls.</p>
<p>4. Locking the new roll into the machine.</p>	<p>4. The new roll is slowly lowered. The right end is inserted in the lock first. The left end is lowered in the assembly that holds it.</p>

JOB ANALYSIS SHEET FOR TRAINING PURPOSES--ContinuedDepartment Reaming Machine Reaming machine

<p>5. Threading the paper from the large roll to the slitting drum.</p>	<p>5. The roll of carbon paper is cut across its width in order to obtain the beginning of the roll. The paper is run from under the large roll to the front side of the slitting drum, then over and around the slitting drum.</p>
<p>6. Starting the reamer.</p>	<p>6. The foot lever is depressed and at the same time the slitting drum is given a few turns by hand. The foot lever is kicked sideways into the catch on the leg of the machine.</p>
<p>7. Observing the counter and stopping the reamer after the required number of revolutions.</p>	<p>7. The machine is stopped by kicking the foot lever out of the catch. This is done when the counter is about twenty revolutions short of the required number.</p>
<p>8. Making the cut.</p> <p>13. The operator returns to the paper he has just deposited on the jogging table.</p>	<p>8. The knife is grasped firmly in the right hand and inserted in the groove in the slitting drum. The knife is slanted towards the front of the machine. The knife is pulled rapidly across the width of the paper on the slitting drum using the groove as a guide.</p>

JOB ANALYSIS SHEET FOR TRAINING PURPOSES--Continued

Department Reaming Machine Reaming machine

9. Taking the paper off of the slitting drum after it has been slit.

9. The loose end of the large roll is first dropped free. The paper is grasped firmly to prevent slipping. Care is taken not to allow the slit paper to move while the knife is replaced in the holder.

10. Transporting the sheets of carbon paper to the jogging table.

10. The paper is grasped firmly in the upper right and lower left corners and heaved onto the jogging table. The paper is not allowed to slip.

11. Laying the sheets of carbon paper on the jogging table.

11. The paper is dropped onto the table and the left end turned back about six inches.

12. Starting the machine again.

12. The machine is again started as described in number six and is winding more paper on the slitting drum during the rest of the steps in this pattern.

13. The operator returns to the paper he has just deposited on the jogging table.

13. The paper is aligned against the back of the jogging table. The right hand edge of the paper is fanned out so that the spread is about one and one-fourth inches.

correct technique. Many of the key points will need to be repeated many times for the trainee to grasp the significance of the method employed. Much patience will be required on

th JOB ANALYSIS SHEET FOR TRAINING PURPOSES--Continued

Department Reaming Machine Reaming machine

14. Transporting the paper from the jogging table to the lay up table.	14. The right hand edge of the paper is turned down and held firmly during the transporting step to the lay up table. This edge is placed carefully against the sides and back of the table.
15. Final stacking of the sheets of paper.	15. The remaining turned up edge is folded flat. The paper is aligned again and a piece of cardboard placed over the sheets.
16. Observing the counter and preparing to stop the machine.	16. When the counter reaches a number about twenty less than the desired number of sheets the machine is stopped.
17. Stopping the machine.	17. Stopping the reaming machine is done by removing the foot lever from the lock.
18. Making the cut as described in number eight.	18. Same as number eight.

The entire operation is repeated after step number eighteen is reached. It is evident that many of the key points need demonstrating by the instructor to convey the correct technique. Many of the key points will need to be repeated many times for the trainee to grasp the significance of the method employed. Much patience will be required on

the part of the instructor, but a good instructor has this virtue and can afford to repeat and to explain several times if it will benefit the employee.

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